Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

A281.39
M34Am
Cop. 2

AMS-518
November 1963

U. S. DEPT. OF AGRICULTURE
NATIONAL AGR...
FEB 25 1964
CURRENT SERIAL RECORDS

CHANGES IN SEDIMENTATION VALUE OF STORED WHEAT

A Study of South American Wheat

U. S. DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Grain Division

CHANGES IN SEDIMENTATION VALUE OF STORED WHEAT --A STUDY OF SOUTH AMERICAN WHEAT

by W. T. Greenaway, C. B. Marcus, M. H. Neustadt, and Lawrence Zeleny 1/

Do important changes occur in the sedimentation value of wheat during storage?

That question assumed considerable practical importance when it was announced in the late summer of 1961 that sedimentation value would be used as a basis for loan value premiums starting with the 1962 wheat crop. Since it seemed likely that any changes which might occur would be more rapid in the early months after harvest, a need for additional information based on controlled studies became apparent.

Accordingly, the Foreign Agricultural Service of the U. S. Department of Agriculture arranged to have wheat from five South American countries--Colombia, Uruguay, Chile, Argentina, and Peru--sampled immediately after harvest, at intervals of two weeks for the first month, and at monthly intervals thereafter. The wheat from which the samples were drawn was harvested in December 1961 and January 1962 and was kept in bags of not less than 55 pounds each in granaries where bulk wheat was stored. All samples were air mailed in moistureproof containers to Beltsville, Maryland, for testing by the Grain Division of USDA's Agricultural Marketing Service.

Sampling of certain lots that became badly infested with weevils during the study was discontinued, and these lots were excluded from the study.

Initial sedimentation values of the 55 lots of wheat ranged from a minimum of 3 to a maximum of 76, thus covering virtually the entire known range. Initial and final values for each of the lots are recorded in Table 1.

1/ Grain Division, Agricultural Marketing Service, U. S. Department of Agriculture.

Table 1.--Initial and final sedimentation values of wheat stored in South American countries for periods of 3 to 8 months after harvest.

Sample identification	Sedimentation value			Months in storage
	Initial	Final	Change	
		Colombia		
1. Toea	76	72	-4	5
2. "150"	46	47	+1	6
3. Narino	34	37	+3	6
4. Bonza	31	33	+2	5
		Uruguay		
1	47	50	+3	6
2	15	14	-1	6
3	58	61	+3	4
4	50	49	-1	6
5	57	58	+1	6
6	39	37	-2	6
7	11	10	-1	6
8	8	10	+2	6
9	39	38	-1	6
10	30	29	-1	6
		Chile		
1	11	10	-1	8
2	47	50	+3	7
3	8	8	0	7
4	8	8	0	8
5	23	22	-1	8
6	19	18	-1	8
7	26	28	+2	7
8	8	8	0	8
9	17	18	+1	7
10	34	35	+1	7
11	32	29	-3	8
12	20	18	-2	8
13	26	24	-2	8
14	14	12	-2	8
15	12	12	0	8

-Continued

Table 1.--Initial and final sedimentation values of wheat stored in South American countries for periods of 3 to 8 months after harvest.--continued

Sample identification	Sedimentation value			Months in storage
	Initial	Final	Change	
	Chile (continued)			
16	17	16	-1	8
17	12	12	0	8
18	3	4	+1	8
19	17	16	-1	8
	Argentina Bahia Blanca Zone			
1	31	31	0	7
2	23	22	-1	6
3	33	31	-1	7
4	52	50	-2	6
5	34	32	-2	6
6	41	40	-1	7
7	48	42	-6	7
8	66	68	+2	7
9	69	72	+3	7
10	70	70	0	7
11	71	71	0	7
12	68	67	-1	7
	Peru			
1	31	33	+2	3
2	33	32	-1	3
3	9	8	-1	3
4	6	7	+1	3
5	7	6	-1	3
6	5	5	0	3
7	5	4	-1	3
8	3	2	-1	3
9	7	7	0	3
10	9	10	+1	3

The data obtained on the wheat stored in the five different countries is summarized by country in Table 2.

Table 2.--Moisture content and initial and final sedimentation values. Average values by country.

Country	No. of lots	Average moisture content %	Average sedimentation values		
			Initial	Final	Change
Colombia	4	14.0	46.8	47.2	+ 0.4
Uruguay	10	12.3	35.4	35.6	+ 0.2
Chile	19	12.1	18.6	18.3	- 0.3
Argentina	12	12.8	50.5	49.7	- 0.8
Peru	10	13.9	11.5	11.4	- 0.1
All countries	55	12.7	29.4	29.1	- 0.3

The results show that for the 55 lots of wheat included in the study, the maximum change in sedimentation value during the 3- to 8-month storage period was a loss of 6 units in one lot stored for 7 months in Argentina. The average change in sedimentation value was less than 1 unit for each of the five countries included in the study.

For the entire 55 lots of wheat, a change in sedimentation value of more than 3 units occurred in only two instances. Changes of 3 units or less are considered not to be significant since they are within the experimental error of the test. Between the time of the first test (which was shortly after harvest) and the last test (3 to 8 months later), the average sedimentation value for the 55 lots of wheat showed a negligible loss of only 0.3 units.

Fat acidity tests were also made, and with two minor exceptions showed no significant changes during the storage period, indicating that the wheat remained in sound condition.

The results of this study show that, with minor exceptions, significant changes in wheat sedimentation value did not occur during the early months after harvest. Nevertheless, it must be recognized that under some circumstances such changes do occur. Wheat that has deteriorated in quality during storage as evidenced by a large increase in fat acidity or a large decrease in viability will ordinarily also show a decrease in sedimentation value as would be expected. Protein content will not change, even when the wheat has deteriorated to such an extent that it is no longer suitable for any food use.

Some reports have indicated that wheat sedimentation losses may occur without other evidence of deterioration. Generally, these reports have been based on studies that have not included the more sensitive measures of wheat condition.

1913 ★ 50 YEARS ★ 1963
USDA
AMS
OF MARKETING SERVICE